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Glenn Mahony

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Room 2A-207

One AT&T Way

Bedminster, NJ 07921

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/606,677
Filing Date: June 26, 2003
Appellant(s): MAHONY ET AL.

Timothy J. Wall
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1 October 2008 appealing from the Office action mailed 25 April 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

A substantially correct copy of appealed claim 7 appears on page 13 of the Appendix to the appellant's brief. The minor errors are as follows: "1" in line 1 of the claim should not be underlined.

(8) Evidence Relied Upon

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7,349,394	SALA et al.	3-2008
6,236,789	FITZ	5-2001
5,606,555	SINGER	2-1997
6,427,042	DYKE et al.	7-2002

R. Iglesia, "Service-Affecting Optoelectronic Failures in FITL Systems: Downtime, Repair Actions, and Maintenance Expenses", IEEE Journal on Selected Areas in Communications, Vol. 12, No. 2, February 1994

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 7, 17 and 19-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 7 recites the limitation "wherein a composite copper/fiber cable couples a host digital terminal (HDT) and the power source to the optical splitter and the ONU, respectively". Claim 7 depends on claim 1. Claim 1 recites the limitation "wherein a composite copper/fiber cable couples an optical line terminal (OLT) and the power source to the optical splitter and the ONU, respectively". Instant specification teaches in FIG. 3 that a composite copper/fiber cable couples an optical line terminal (OLT) and the power source to the optical splitter and the ONU. Instant specification teaches in FIG. 4 that a composite copper/fiber cable couples a host digital

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terminal (HDT) and the power source to the optical splitter and the ONU. However, nowhere does instant specification teach that an ONU is coupled to both an OLT and a HDT.

Similarly, claim 17 requires that an ONU being coupled to both an OLT and a HDT.

Claims 1, 8, 11, 16, 24, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al. (U.S. Patent 6,577,414 B1) in view of Sala et al. (U.S. Patent 7,349,394 B2), Fitz (U.S. Patent 6,236,789 B1), Singer (U.S. Patent 5,606,555) and Dyke et al. (U.S. Patent 6,427,042 B1).

Regarding claims 1, 24 and 35, Feldman et al. teaches in FIG. 1 a passive optical network (PON). Feldman teaches in FIG. 6 a configuration for FTTH without interrupting legacy services where an optical splitter is coupled to home OEC (equivalent to ONT of instant claim) and a legacy transceiver (equivalent to ONU of instant claim) coupled to the same subscriber premises. Feldman teaches in FIG. 6 an add/drop device for separate wavelength channels λ_1 and λ_2 to/from legacy transceiver and λ_4 and λ_3 to/from OEC. One of ordinary skill in the art would have recognized that the splitters can be arranged in various ways. Sala et al. teach in FIG. 1 a PON where splitter 104 directly subtends a plurality of optical nodes (ON). Sala et al. teaches in col. 5, lines 26-27 that the ONs can be ONU, ONT or a combination of both. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the splitter such that the splitter directly subtends the ONU and the ONT, as taught by Sala et al., in the PON of Feldman et al.

FIG. 6 of Feldman shows the splitter and the legacy transceiver close to each other. One of ordinary skill in the art would have interpreted this to mean that they are co-located.

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The combination of Feldman et al. and Sala et al. fails to teach composite copper/fiber cable. Feldman et al. teaches in col. 7, lines 1-2 that the OEC is powered by the network. It is understood that it means the power source is at a remote location and power is fed to the OEC via a distribution network. Fitz teaches in FIG. 2 a composite copper/fiber cable for distributing power and optical signal from a central office (CO) or headend to ONUs. One of ordinary skill in the art would have been motivated to combine the teaching of Fitz with the modified passive optical network of Feldman et al. and Sala et al. because generating power in a centralized location and distributing power via a distribution network is much cheaper, safer and more efficient than having power source at each ONU. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use copper/fiber cable for distributing power to ONUs from a central location, as taught by Fitz, in the passive optical network of Feldman et al. because generating power in a central location and distributing power via a distribution network is much cheaper, safer and more efficient than having power source at each ONU.

The combination of Feldman et al., Sala et al. and Fitz fails to teach a tree structure (i.e., one splitter is coupled to another splitter). Singer teaches in FIG. 1 tree architecture where a first splitter connects directly to ONU1 and also connects directly to a second splitter where more ONUs are connected. Such tree (or hierarchical) structure allows the distribution of ONUs in a large area with minimal fiber. One of ordinary skill in the art would have been motivated to combine the teaching of Singer with the modified PON of Feldman et al., Sala et al. and Fitz because a tree structure allows the distribution of ONUs in a large area with minimal fiber. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made

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to cascading splitters, as taught by Singer, in the modified PON of Feldman et al., Sala et al. and Fitz because a tree structure allows the distribution of ONUs in a large area with minimal fiber.

The combination of Feldman et al., Sala et al., Fitz and Singer fails to teach a pole. Dyke et al. teaches in FIG. 1 street distribution comprising poles and drop fibers. One of ordinary skill in the art would have been motivated to combine the teaching of Dyke et al. with the modified PON of Feldman et al., Sala et al., Fitz and Singer because poles are owned by service providers and the installation of ONU on poles does not require acquisition of additional property. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to install ONU on poles, as taught by Dyke et al., in the modified PON of Feldman et al., Sala et al., Fitz and Singer because poles are owned by service providers and the installation of ONU on poles does not require acquisition of additional property.

Regarding claims 8, 11 and 32, it is understood from FIG. 1 and FIG. 6 of Feldman et al. that there are a plurality of ONUs and a plurality of ONTs. Furthermore Singer teaches a second ONU that provides communications for a second plurality of subscriber premises.

Regarding claim 16, Dyke et al. teaches in FIG. 1 a plurality of poles.

Claims 7, 17, 19-20 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al., Sala et al., Fitz, Singer and Dyke et al. as applied to claims 1, 8, 11, 16, 24, 32 and 35 above, and further in view of Iglesia (R. Iglesia, "Service-Affecting Optoelectronic Failures in FITL Systems: Downtime, Repair Actions, and Maintenance Expenses", IEEE Journal on Selected Areas in Communications, Vol. 12, No. 2, February 1994).

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Feldman et al., Sala et al., Fitz, Singer and Dyke et al. have been discussed above in regard to claims 1, 8, 11, 16, 24, 32 and 35. The difference between Feldman et al., Sala et al., Fitz, Singer and Dyke et al. and the claimed invention is that Feldman et al., Sala et al., Fitz, Singer and Dyke et al. do not teach a host digital terminal (HDT). Iglesia teaches in Table II that the term HDT is used by Bellcore and the term OLT is used by ETSI. The terms HDT and OLT are equivalent. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the term HDT instead of OLT in the modified PON of Feldman et al., Sala et al., Fitz, Singer and Dyke et al. because these two terms are equivalent, as taught by Iglesia.

Regarding claim 33, Iglesia teaches in Table II that the HDT or OLT is located at a central office.

(10) Response to Argument

The Appellant argues on page 6 of the Brief “The Final Action specifically states that nowhere does the instant specification teach that an ONU is coupled to both an OLT and a HDT. Final Action, page 2. Appellants submit that the Final Action appears to incorrectly interpret the claim language by apparently failing to consider the recited terms ‘respectively’ in the claims.” However, instant specification does not teach that both an OLT and a HDT are coupled to the same optical splitter.

Instant specification discloses in FIG 2 OLT 214 that is coupled to splitter 226 which is further coupled to ONU 240; FIG. 2 does not show any HDT. Instant specification discloses in FIG. 3 OLT 324 that is coupled to splitter 329 which is further coupled to ONU 340; there is no HDT in FIG. 3. Instant specification discloses in FIG. 4 HDT 424 that is coupled to splitter 429

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which is further coupled to ONU 440; FIG. 4 does not show any OLT. Instant specification discloses in FIG. 5 OLT 512 that is coupled to splitter 520 which is further coupled to ONU 532; FIG. 5 does not show any HDT. Instant specification discloses in FIG. 7 OLT 512 that is coupled to splitter 520 which is further coupled to ONU 732; FIG. 7 does not show any HDT. Also, the list of claims originally filed does not include both an OLT and a HDT in any claim. Therefore, instant specification, as originally filed, does not support a configuration where there are an OLT that is coupled to a splitter and a HDT that is coupled to the same splitter. An OLT or an HDT is referred to as head-end equipment (see, e.g., page 7, lines 6-7 of instant specification). In other words, instant specification only teaches configurations with one piece of head-end equipment.

The Appellant argues on page 7 of the Brief:

In response to Appellants' arguments, the Final Action states that "[t]he terms OLT and HDT are equivalent." Final Action, page 7. As an initial matter, Appellants note that the terms are specifically and distinctly recited in Claim 1 and thus cannot be rendered equivalent by some extrinsic source or erroneous conclusion. Moreover, the Final Action contradicts itself. For example, the distinction between an OLT and a HDT was the basis for the confused interpretation upon which the Final Action based the rejections under 35 U.S.C. § 112, first paragraph, as discussed above.

First of all, claim 1 only recites an OLT; claim 1 does not recite a HDT. The references that the Examiner relies upon for rejecting claim 1 clearly teach an OLT. For example, Singer teaches in FIG. 1 an OLT.

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In regard to the 35 U.S.C. 112 rejection of claim 7, 17 and 19-20, the issue is **not** whether OLT and HDT are equivalent or not. The issue is whether instant specification supports an architecture that has both an OLT **and** a HDT, regardless of whether they are equivalent or not. Such architecture would have provided redundant or fault-tolerant capability, which is beyond the scope of instant specification.

In regard to the art rejection of claim 7, the Examiner does state that HDT and OLT are equivalent. Such statement is supported by Iglesia. Iglesia maps in Table II terminologies used by ETSI versus those used by Bellcore. It is clear from Table II that HDT and OLT are equivalent. Both terms are used to indicate the central office terminal equivalent for a passive optical distribution network.

In fact, the Examiner notes that instant specification teaches on page 9 “FIG. 4 ..., in which a host digital terminal (HDT) 424 provides equivalent functionality to the OLTs 214, 324 of FIGs. 2 and 3.” Furthermore, instant specification states on page 7, lines 6-8 “for purposes of the present application, “OLT” may be construed as referring to any type of head-end equipment that provides the functionality of an OLT described herein”. USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Based on evidence provided by Iglesia and instant specification, the Examiner concludes that OLT and HDT are equivalents. Where the claimed differences involve the substitution of interchangeable or replaceable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem, such substitution has been judicially determined to have been obvious. See In re Ruff, 118, USPQ 343 (CCPA 1958). Therefore, the rejection of claim 7 is proper.

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The Appellant argues on page 7 of the Brief “Additionally, Appellants respectfully submit that Claim 1 is directed to a system that includes a specific combination of recitations that is not disclosed or suggested in the cited references. Further, Appellants respectfully submit that given the scope of the claim recitations, an obviousness rejection using the number of references that would have to be combined to read on the claims would necessarily be based on hindsight analysis and therefore be improper.”

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The Appellant argues on page 9 of the Brief that Feldman, Sala, Dyke, Fitz, Singer and Iglesia, alone or in combination, do not disclose or suggest "wherein a composite copper/fiber cable couples a host digital terminal (HDT) and the power source to the optical splitter and the ONU, respectively," as recited in Claim 17, in combination with other recitations therein. The Examiner disagrees. Fitz teaches in FIG. 2 a composite copper/fiber cable for distributing power

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and optical signal from a central office (CO) or headend to ONUs. Sala et al. teaches in FIG. 1 that the fiber from an OLT is further coupled to a splitter. Feldman et al. also teaches in FIG. 6 that a fiber from the headend is coupled to a splitter, which subtends the ONU. Therefore, the combination of Feldman, Sala, Dyke, Fitz, Singer and Iglesia teaches the limitation "wherein a composite copper/fiber cable couples a host digital terminal (HDT) and the power source to the optical splitter and the ONU, respectively," as recited in claim 17.

The Appellant argues on page 9 of the Brief that Feldman, Sala, Dyke, Fitz, Singer and Iglesia, alone or in combination, do not disclose or suggest "a second optical splitter that is positioned at the second pole and that interfaces the at least one of the second optical fibers to aerial fiber optic drops to ONTs located at respective subscriber premises on the first side of the street and a second side of the street," as recited in Claim 17, in combination with other recitations therein. The Examiner disagrees. Singer teaches in FIG. 1 tree architecture where a first splitter connects directly to ONU1 and also connects directly to a second splitter where more ONUs are connected. Dyke et al. teaches in FIG. 1 street distribution comprising poles and drop fibers. It is common sense that houses can be located on both sides of a street. Therefore, it is obvious to have "a second optical splitter that is positioned at the second pole and that interfaces the at least one of the second optical fibers to aerial fiber optic drops to ONTs located at respective subscriber premises on the first side of the street and a second side of the street".

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In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/S. K. L./

Primary Examiner, Art Unit 2613

Conferees:

/Jason Chan/

Supervisory Patent Examiner, Art Unit 2613

/Kenneth N Vanderpuye/

Supervisory Patent Examiner, Art Unit 2613